

**ABSTRACT**

[1421] Techniques to achieve better utilization of the available resources and robust performance for the downlink and uplink in a multiple-access MIMO system. Techniques are provided to adaptively process data prior to transmission, based on channel state information, to more closely match the data transmission to the capacity of the channel. Various receiver processing techniques are provided to process a data transmission received via multiple antennas at a receiver unit. Adaptive reuse schemes and power back-off are also provided to operate the cells in the system in a manner to further increase the spectral efficiency of the system (e.g., reduce interference, improve coverage, and attain high throughput). Techniques are provided to efficiently schedule data transmission on the downlink and uplink. The scheduling schemes may be designed to optimize transmissions (e.g., maximize throughput) for single or multiple terminals in a manner to meet various constraints and requirements.